

Remarks

Claims 26-28, 31, 33, 37, 42, 46, 48, 50, and 52 have been rejected under 35 U.S.C. § 112. The Office Action states that the prior rejection “has been maintained due to applicants’ failure to modify in the amendment.” Applicant respectfully traverses this rejection.

Applicant has no duty to amend the claims in view of a rejection under 35 U.S.C. § 112 if the Office presents no sound basis for the rejection. First, as Applicant understands the prior rejection, the basis for the rejection was, in part, the language of the independent claims which did not specify the number of formamide groups present in the formamide compound. However, Applicant has voluntarily amended claim 26 by incorporating the limitations of claim 27, claim 26 now specifying that there are 1-10 formamide groups. This amendment also restricts the number of isocyanate groups in the product to from 1 to 10, as the isocyanate groups are each derived from a formamide group.

Second, as explained in Applicant’s last response, the claims are not directed to diorganocarbonates generally, as the Examiner apparently believes, but is limited to diaryl carbonates, mixed (aryl)(aliphatic)carbonates and mixed (aryl)(cycloaliphatic)carbonates. These carbonates are well known to those skilled in the art, and there is no reasoning of record to indicate why any given diorganocarbonate within the scope of the claims would not be operative in the claimed process. Without any scientific reasoning why the claim is not enabled in this respect, the rejection must be withdrawn. Moreover, the Office is reminded that, according to *In re Marzocchi*, 169 U.S.P.Q. 367 (C.C.P.A. 1971), not only is there no requirement other than objective enablement, but moreover, the specification is presumptively accurate, i.e. if the specification indicates that the claimed diorganocarbonates will work, the law presumes that this is correct. If the Office believes otherwise, it must present cogent evidence to the contrary. A mere allegation that diorganocarbonates is “too broad” or “will not work” is legally insufficient to rebut the presumed accuracy of the specification. Evidence in the form of patents or printed publications, the Declaration of an expert in the field, or if

based on the Examiner's knowledge, a Declaration under 37 C.F.R. 1.104(d)(2) must be of record. No such evidence has been submitted by the Office. The Office cannot supplant the teachings of the inventor with its own unsupported beliefs. If there is no evidence of record to support the rejection, then there is no evidence which can be considered by the Board of Appeals if appeal should be necessary.

Certain claims (26, 27, 28, 31, 33, 37) have been rejected under 35 U.S.C. § 112, ¶ 2. Applicant has addressed this rejection adequately in their prior response. The claims are addressed to one of ordinary skill in the art. The skilled artisan has no difficulty ascertaining the scope of the claims, and the Office has presented no scientific reasoning to support its position. Applicant, to the contrary, has presented the Declaration of Robert Mason, who is skilled in the art. Mr. Mason, on page 6, paragraph 11, states:

I also note that the Examiner has rejected the claims as indefinite, and as non-enabled. To one skilled in the art, the specification is clearly enabling. Selection of reactants such as the amine from which the formamide is to be produced, the formamide itself, catalysts, reaction temperatures, etc. can all be made by one skilled in the art without undue experimentation. For example, the temperature at which the carbamate intermediate decomposes can be readily ascertained by use of common and readily available techniques, or can be monitored by gradually increasing the reactor temperature and monitoring isocyanate production by HPLC, GC, etc. To one skilled in the art, the specification is enabling and the claims definite.

Thus, it is clear that each term which the Office has characterized as indefinite is indeed definite to the skilled artisan. If the Office is to maintain the rejection, the burden is on the Office to present evidence which refutes Mr. Mason's Declaration. Otherwise, the rejection must be withdrawn.

Based on the above, withdrawal of the rejections of the claims under 35 U.S.C. § 112 is solicited. If any of the rejections are maintained, the Office is requested, as required by the MPEP and 37 C.F.R., to specifically state which rejections under 35 U.S.C. § 112 are being maintained; the claims to which these rejections pertain; and evidentiary support for the rejections.

Claims 26-53 have been rejected under 35 U.S.C. § 103(a) as unpatentable over *Okawa*, in view of *Kober* further in view of *Faraj*. This rejection is respectfully traversed.

The Office seems to believe that merely because the references are all related to the synthesis of isocyanates, either directly or indirectly, that they are combinable. That is not correct. Whether or not the references are directed to isocyanates is relevant to combinability only in the sense of being "analogous" reference. "Analogous" references may only be combined provided they meet the requirements of *In re Dembiczak*, *In re Lee*, and similar cases cited in Applicant's last response. A "non-analogous" reference cannot be combined under any circumstances.

Whether the references are analogous or not is irrelevant here, because there is no evidence of motivation to combine. The references are discussed in the Declaration of Mr. Mason. Mr. Mason indicates that one skilled in the art would not be motivated to combine these references (Mason Declaration, ¶ 9, pp. 4-5; ¶ 9, p. 5, lines 15-19, and gives sound scientific reasons why this is so. For example, Mr. Mason indicates that the reactions of *Okawa* and *Kober* share no similarities; rather they are quite different, employing different starting materials and completely different reaction mechanisms. (Mason Declaration, ¶ 9.,

p. 5, lines 3-14). Mason indicates, in the same paragraph, that *Faraj* is also unrelated, and also an entirely different reaction.

The Office first excuses its combination of the references by categorizing *Kober* and *Faraj* as “secondary” and “tertiary” references. This characterization is irrelevant. Absent “clear and particular” evidence to combine, *Dembiczak, op. cit.*, the references may not be combined regardless of whether they are primary, secondary, tertiary, etc.

The evidence in the record, including the specification, the Mason Declaration, and the prior art cited by Mason in his Declaration are all inimical to combination. For example, *Faraj* is cited for teaching that the 2,4-bis(formamide) of toluene diamine is a well known reactant. While Applicant has not consulted Beilstein or the CAS database, Applicant would be indeed surprised if this compound was not known well prior to *Faraj*. However, regardless of whether a compound is known, its mere existence does not provide any motivation for its use in any particular reaction. *Faraj* does not teach or suggest that 2,4-toluene diamine bis(formamide), disclosed in Example 8, be reacted with any carbonate, much less the aryl and mixed aryl carbonates of Applicant’s claims. Rather, *Faraj* reacts this compound with n-hexanol, a completely reactant, in a completely different reaction which shows no similarities with the reactions of Applicant or with *Kober* or *Okawa*.

There is no evidence of record to support combination of *Faraj* with either *Kober* or *Okawa*. If the Examiner disagrees, the Examiner must cite those portions of the references which suggest this combination. In this case, the bare existence of the bisformamide has been isolatedly combined with two references which disclose completely different reactions, which clearly proceed with completely different reaction mechanisms (Mason Declaration, ¶9). This type of isolative combination is exactly the type eschewed by the CCPA (predecessor to the CAFC) in *In re Wesslau*, 147 USPQ 391 (CCPA 1965).

In *Wesslau*, the claims were directed to preparing polyethylene polymers with low polydispersity by employing a catalyst system comprising titanium trichloride, a tetravalent

titanium compound, and a mixed alkyl-(alkoxy, halo, aryloxy) aluminum compound. The three references cited against the claims were all directed to polyethylene polymerization, and each disclosed some subcombination of the required catalytic species. The CCPA reversed the Board's affirmance of the rejection, since although in combination with the references taught all the limitations, there was no suggestion in any of the reference to make the particular combination employed by the Applicant. The CCPA stated:

The ever present question in cases within the ambit of 35 U.S.C. 103 is whether the subject matter as a whole would have been obvious to one of ordinary skill in the art following the *teachings* of the prior art at the time the invention was made. It is impermissible within the framework of section 103 to pick and choose from any one reference only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. The Anderson patent is the only reference before us which recognizes the desirability of producing polyethylene with a narrow molecular weight distribution range. Were one to follow the teachings of that patent in its entirety, he would be led to believe that control over the molecular weight distribution of polyethylene was gained independently of the catalyst system, a belief untenable in light of appellant's disclosure.

Wesslau at 393. (Emphasis added).

The *Wesslau* case is particularly applicable here, where *Faraj* does not teach, suggest, or even mention the reaction of aryl carbonates with the bis(formamide) of 2,4-TDA. Rather, *Faraj* employs a completely different reaction, reacting the bis(formamide) with an alcohol. Alcohols are completely different chemically from aryl carbonates.¹ Were one to follow *Faraj*, paraphrasing the *Wesslau* decision, one would be directed away from the claimed invention, and instead to reactions employing formamides and alcohols, reactions which result

¹ Whereas alcohol is a reactant in *Faraj*, it is a product of Applicant's reaction.

in low yields. The rejection in this case is premised on exactly the same type of “picking and choosing” forbidden by *Wesslau*.

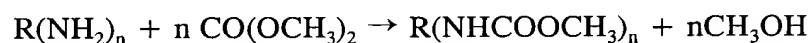
With regard to the combination of *Okawa* and *Kober*, this combination is also improper. The Examiner states:

Thus, it would have been obvious for the skillful artisan in the art to have motivated to incorporate Kober et al.’s diphenyl carbonate into the *Okawa*’s process, thereby obtaining the desired product with an expectation of success as disclosed in the *Okawa* reference.

Office Action, p. 5. However, this is not the case for many reasons, all which are already of record.

First, the reactions of *Kober* and *Okawa* are different. *Kober* reacts amines with diarylcarbonates; *Okawa* does not. Rather, *Okawa* reacts formamides with dimethylcarbonate. *Okawa* clearly and unambiguously indicates that it is the formamide which reacts with dimethylcarbonate, not an amine. When an amine is used as a starting material in *Okawa*, it is used in conjunction with methylformate, which rapidly reacts to form the formamide, which then reacts with the dimethyl carbonate.

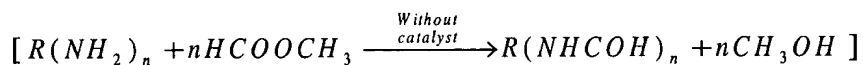
As stated by *Okawa*, reaction of amines with dimethyl carbonate is disclosed in the prior art, but does not involve formamide compounds.



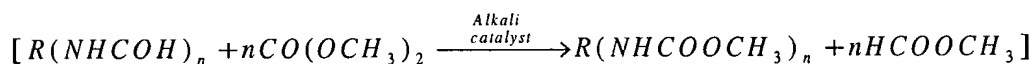
Okawa, column 4, lines 15-28. Thus, *Okawa* teaches against reactions between amines and carbonates, the same type of reaction employed with *Kober* with aryl carbonates, and an additional reason why the references are not combinable. *Okawa* teaches away from the *Kober* process.

Okawa further states:

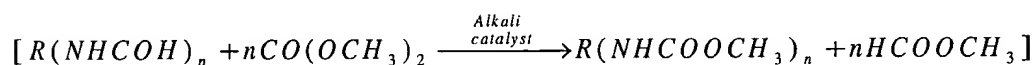
On the other hand, according to the process of the second aspect of the present invention, based on the finding that the rate of reaction of the formula (1)'



in the absence of catalyst and the rate of reaction of the formula (2)'



in the presence of alkali catalyst are very high as already described above in relation to the first aspect of the present invention, a urethane compound is obtained with a very high reaction rate and a high yield through the reaction of the formula (2)'



using as the reaction intermediate the formamide compound formed by the reaction of the formula (1)'



and then an isocyanate compound is produced by the thermal decomposition thereof.

Thus, it is clear that amines *per se* are not useful in *Okawa's* process. Rather, only formamides are useful. The formamide is either prepared separately, or in the "second aspect," prepared *in situ*. If amines are employed, they are first converted to formamides *in situ* to form the "reaction intermediate" . . . "formamide compound" referred to by *Okawa*. However, *Kober* does not employ formamides, nor does he react amines with methyl formate to generate formamides *in situ*. *Kober* instead teaches direct reaction of amines with diphenyl carbonate, just the reaction with *Okawa* teaches against. These references cannot be combined.

Secondly, *Kober* employs a diarylcarbonate, which generates a high boiling point arylol, while *Okawa* explicitly employs dimethylcarbonate, which generates a low boiling aliphatic alcohol (methanol). The generation of low boiling methanol according to *Okawa*, allows separation of the isocyanate generated by carbamate decomposition from the methanol also produced, due to the great difference in boiling points. If a carbonate which generated a higher boiling aliphatic alcohol, e.g. propanol, or an arylol, e.g. phenol, were used, this advantage disclosed by *Okawa* would not occur. The skilled artisan, reading *Okawa*, would thus not be motivated to employ a carbonate other than dimethylcarbonate, as the resulting byproduct alcohol would have a much higher boiling point. These differences between *Kober* and *Okawa*, and what they suggest to one skilled in the art is discussed in the Mason Declaration. Note particularly the last paragraph on page 3, the first two paragraphs of page 4, and the third and fourth paragraphs of page 5.

The inescapable conclusion is that there is not motivation to combine *Kober* and *Okawa*.

Moreover, certain of Applicant's claims are directed to reacting aryl formamides, where the formamide groups are attached directly to the aryl ring, i.e. are not arylaliphatic formamides as disclosed by *Okawa*. One skilled in the art is aware that aryl formamides do not react with dimethylcarbonate to form O-carbamates or isocyanates, as disclosed by *Gurgiolo* in U.S. 4,268,684, the subject of the second paragraph of page 6 of the Mason Declaration. Further proof of non-reaction of dimethylcarbonate is given by Mason on page 6 of his Declaration. Since aryl formamides are not useful in the process of *Okawa*, one would not be motivated by *Okawa* to employ such formamides with any carbonate. *Kober* cannot supply this deficiency, as first, *Kober* teaches an entirely different reaction, and second, *Okawa* teaches against using the *Kober* process.

Finally, with respect to the claims directed to recycling, the Office has produced no reference which discloses, teaches, or suggests the subject matter of these claims. In the absence of a reference, this rejection cannot be maintained. A bare statement that the claimed

process is obvious or within the skill of the art is insufficient. For rejections under 35 USC §§ 102 and/or 103, prior art is necessary. None of the cited references teach or suggest the claimed subject matter, either alone or in combination.

For the reasons expressed above, Applicant earnestly submits that the claims fully meet all statutory requirements and are patentable under the law. If any rejection is to be maintained, sound scientific reasoning in support of the rejection must be provided, and the evidence presented in the Mason Declaration must be considered as well. Any rejection based on personal knowledge must be supported by an appropriate affidavit, as requested.

Applicants submit that the claims are now in condition for Allowance, and respectfully request a Notice to that effect. If the Examiner believes that further discussion will advance the prosecution of the Application, he is highly encouraged to telephone Applicants' attorney at the number given below.

Respectfully submitted,

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